

**Abstract of the Disclosure**

**Tread Noise Improvement by Modulating Groove Resonance Frequency**

A tire 10 has a plurality of shoulder tread elements 50 defined by lateral grooves 17a and 17b and circumferential grooves 15. The tread 12 of the tire 10 is pitched using three or more pitch sizes. Each pitch has a lateral groove 17a open to the adjacent circumferential groove 15 or closed to the adjacent circumferential groove as a function of a predetermined sequence of non-uniformity.